

# MOROCCO AND WESTERN SAHARA

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## MOROCCO

The mineral industry of Morocco was dominated by phosphate mining in 2001; Morocco was the world's second largest producer of phosphate rock after the United States in 2001 (Jasinski, 2002); about 22 million metric tons of phosphate rock was mined. Morocco also mined a wide range of minerals that included barite, coal, cobalt, copper, fluor spar, gold, iron ore, lead, manganese, salt, silver, and zinc and had a significant capacity for conversion of phosphate rock into fertilizer. The gross domestic product was estimated on the basis of purchasing power parity to be about \$112.18 billion in 2001. Agriculture was the dominant industry. Exports in 2000 were \$7.3 billion led by \$1.5 billion worth of agricultural products; phosphate was the leading mineral export at \$431 million. Morocco's population was estimated to be 28.7 million in 2001 (World Bank, 2001<sup>1</sup>; International Monetary Fund, 2002§).

The Government agency responsible for overseeing the mining industry of Morocco is the Ministry of Industry, Trade, Energy, and Mines. Several state-owned organizations play a direct role in mineral resource development. The Bureau de Recherches et de Participations Minières (BRPM) is responsible for the development of most mineral resources. La Centrale d'Achat et de Développement de la Région Minière de Tafilalet et de Figuig was formed to promote and support the interests of artisanal miners in the Tafilalet and the Figuig regions. The Office Cherifien des Phosphates (OCP) is responsible for managing and controlling all aspects of phosphate mining and beneficiation (Mbendi Information Services (Pty.) Ltd., 2001a§).

The Office National de Recherches et d'Exploitations Pétrolières (ONAREP) is responsible for overseeing the energy sector. During 2000, the ONAREP made changes to petroleum laws to encourage more investment. More specifically, new petroleum laws included a 10-year tax holiday after first production for offshore operators and a reduction in royalty payments to 10% for onshore and shallow water producers and to 7% for deepwater producers (World Oil, 2000; Mbendi Information Services (Pty.) Ltd., 2001b§).

In 2001, Morocco produced 1,190 kilograms (kg) of gold. Akka Gold Mining Company [jointly owned by Holding Minier du Groupe ONA (Managem) of Morocco (70%) and the BRPM (30%)] operated the gold mine at Iourim in southern Morocco. The mine was estimated to have reserves of 34,000 kg of gold. In 2001, Managem announced that it had received a loan for \$28.5 million from the European Investment Bank to fund the

development of the mine. Also in 2001, Managem signed an agreement with La Société de Promotion et de Participation pour la Coopération Économique (Proparco) (a subsidiary of Agence Française de Développement) for a \$20 million loan to help fund the mine (Africa Energy & Mining, 2000a; Middle East Economic Digest, 2001).

In 2000, the Société Nationale de Sidérurgie launched the construction of a new industrial plant that was expected to produce concrete steel-reinforcement bars and hot-rolled metal sections. The 300,000-metric-ton-per-year (t/yr)-capacity rolling mill, which covers an area of 25 hectares inside the Jorf Lasfar industrial area, was expected to start production in 2002 at a cost of \$60 million (Metal Bulletin, 2000; Morocco Ministry of Communications, 2000§).

Morocco produced about 8.5 million metric tons (Mt) of cement in 2001; this was an increase of nearly 5% compared with the 8.1 Mt of cement in 2000. The leading companies operating in Morocco were Lafarge Ciments of France, Ciments du Maroc (controlled by Italcementi of Italy), Ciments de l'Oriental (controlled by Holderbank of Switzerland), and Asmet de Temara (controlled by Cimentos de Portugal). In 2000, Managem and Lafarge Ciments announced a joint venture to build a 960,000-t/yr-capacity cement plant in the northern Moroccan city of Tetuan. The plant would cost \$120 million and was anticipated to begin operating by 2003. They also noted that the plant would help meet Moroccan cement needs, which they estimated would grow to 15 Mt from 7 Mt by 2015 (Arabicnews.com, 2000§).

In 2001, phosphate rock production in Morocco increased to about 22.0 Mt from about 21.5 Mt in 2000; amounts include phosphate rock production in Western Sahara which was estimated to be 1.5 Mt for both years. In April, OCP officials announced that they intended to invest about \$780 million to expand operations and to build additional cargo ships during the next 5 years. Furthermore, they noted that they would continue to develop value-added derivatives, such as phosphoric acid and fertilizers (Actualités Presse, 2001b§). In 2001, phosphoric acid production was about 2.8 Mt and production of fertilizers was about 2.0 Mt.

Petroleum exploration or prospecting licenses in force in 2001 were held by the state-owned ONAREP or by joint ventures of the ONAREP and international companies, which included Conoco Ltd. of the United Kingdom, Energy Africa Ltd. of South Africa, Enterprise Oil Exploration Ltd. of the United Kingdom, Kappa Energy Co. Ltd. of Canada (formerly Cabre Exploration Ltd.), Kerr-McGee Corp. of the United States, Lasmo Overseas Nederland (II) B.V. of the Netherlands, Shell Prospecting Africa B.V., Lone Star Energy (a subsidiary of Skidmore Energy Inc. of the United States), Taurus Petroleum AB of Sweden, and Vanco Energy Co. of the United

<sup>1</sup>References that include a section twist (§) are found in the Internet References Cited section.

States (Arab Petroleum Research Center, 2001, p. 283). In 2000, Lone Star Energy announced that it had discovered oil and gas in Talsinnt, a region in the High Atlas Mountains of northeastern Morocco 200 kilometers (km) from the Algerian border. Although original estimates of potential reserves were later revised down to much lower levels than originally estimated, the news drew significant international attention (Africa Energy & Mining, 2000b; Financial Times, 2000; Middle East Economic Digest, 2000). In 2001, additional exploration licenses were awarded to nearly all the above mentioned companies.

Besides the Talsinnt region, exploration was ongoing in seven other regions—the Loukos South Offshore block in the Atlantic Ocean north of Rabat; the Al Hoceima-Nador Offshore area in the Mediterranean; the Cap Draa Haute Mer Offshore area south of Agadir; an offshore block south of Rabat; a block at Labrouj in the center of the country; an area around Ounoura, on the Atlantic coast near Essaouira; and five deepwater blocks on the Atlantic coast south of Agadir (U.S. Energy Information Administration, 2001§).

Morocco's major oil distributor was the Société Anonyme Marocaine de l'Industrie Raffinage (SAMIR). In 2000, SAMIR was engaged in an investment project of \$400 million to upgrade its refining capabilities. When the upgrade is complete, SAMIR will have a capacity of 140,000 barrels per day (Washington Times, 2000§).

In February 2001, CMS Energy Corp. of the United States announced that commercial operation had been achieved at Unit 4 of its \$1.5 billion, 1,356-megawatt Jorf Lasfar powerplant on the Atlantic coast of Morocco 126 km southwest of Casablanca. The Jorf Lasfar facility will generate more than one-half of Morocco's total electricity supply using coal and is considered to be the largest independent powerplant in Africa. CMS Energy has been supplying power to the Office Nationale de l'Electricité (the Moroccan national utility) (CMS Energy Corp., 2001§).

In January 2001, the Office National des Chemins de Fer du Maroc announced plans to spend \$162 million in 2001 on upgrading the country's railway network. Specifically, an extra track will be laid between Meknes and Fez, and port stations at Ain Sbaa and Casablanca will be refurbished. The project, which was launched in 2000, was part of a 4-year \$650-million plan primarily to deal with handling increased ridership by tourists and the needs of the phosphate industry. The project was being financed by the European Investment Bank and the Japanese Bank for International Cooperation (Actualités Presse, 2001a§).

## WESTERN SAHARA

The mineral industry of Western Sahara was dominated by phosphate mining in 2001, producing an estimated 1.5 Mt. The open pit phosphate rock mine at Bou Craa was operated by the OCP. Western Sahara's economy is dependent on agriculture, fishing, and phosphate mining. All trade and economic activities are controlled by the Moroccan Government. Western Sahara's population was estimated to be about 250,000 in 2001 (U.S. Central Intelligence Agency, 2001§).

In late 2001, the ONAREP awarded oil exploration permits

for Western Sahara's entire offshore area to TotalFinaElf and Kerr-McGee Corporation. In protest, the Sahrawi government wrote to the United Nations (UN) concerning the matter. The UN was expected to issue a ruling on the dispute sometime in 2002 (Africa Energy Intelligence, 2001; Afrol news, 2002§).

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## **Major Sources of Information**

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TABLE 1  
MOROCCO AND WESTERN SAHARA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/ METALS	1997	1998	1999	2000	2001
Antimony concentrate:					
Gross weight	350 e/	350 e/	600 r/	-- r/	--
Sb content	160	160 e/	250 r/	-- r/	--
Cobalt concentrate:					
Gross weight	7,137	2,874	9,488	14,341	14,000 e/
Co content	714	287	863	1,305	1,300 e/
Cobalt recovered from tailings	220 e/	242	472	967 r/	1,337
Copper:					
Concentrates, gross weight	37,344	26,780	25,260	23,150	19,120
Matte, gross weight	2,682	2,841	2,212	2,117	1,580
Cu content, concentrates and matte	14,000 r/	8,200	7,747	7,080 r/	5,800
Gold e/ kilograms	450	450	--	505 r/ 3/	1,190 3/
Iron and steel:					
Iron ore:					
Gross weight	11,965	9,285	6,625	6,462 r/	5,774
Fe content e/	8,260	6,220 3/	4,440	4,400 r/	3,900
Metal e/					
Pig iron	15,000	15,000	15,000	15,000	15,000
Steel, crude	5,000	5,000	5,000	5,000	5,000
Lead:					
Concentrate:					
Gross weight	110,507	115,042	114,184	117,535 r/	110,906
Pb content	77,056	79,300	79,900	81,208 r/	76,747
Cupreous matte, Pb content e/	500	600	600	600	600
Metal:					
Smelter, primary only	66,202	65,000 e/	65,209	66,812	58,178
Refined:					
Primary	64,202	60,929	65,209	66,812	58,178
Secondary e/	3,000	3,000	3,000	3,000	3,000
Total	67,000	64,000	68,000 r/	70,000	61,000
Manganese ore, largely chemical-grade	30,806	28,332	29,150	25,830	13,757
Mercury e/	5	10	10	10	10
Silver:					
Ag content of concentrates and matte kilograms	35,000	66,531	51,197	43,000	42,000
Ag content of mine and smelter bullion do.	226,000	240,412	226,692	246,000	238,000
Total do.	261,000	306,943	277,889	289,000	280,000
Strontium	NA	NA	--	3,700 e/	3,700 e/
Zinc concentrate:					
Gross weight	171,796	216,011	216,197	201,692 r/	174,831
Zn content	89,248	112,000	111,703	103,064 r/	89,339
INDUSTRIAL MINERALS					
Barite	338,096	353,438	328,945	343,557 r/	471,102
Cement, hydraulic thousand tons	7,236	7,414 r/	7,530 r/	8,100 r/	10,000 e/
Clays, crude:					
Bentonite	49,633	33,311	36,528	43,152 r/	71,741
Fuller's earth (smectite)	24,425	27,650	21,956	30,665	40,664
Montmorillonite (ghassoul)	2,933	3,180	2,750	2,476	2,270
Feldspar	15,110	18,332	1,112	6,052 r/	8,979
Fertilizers thousand tons	2,200 e/	2,132	2,111	2,100 e/	2,000 e/
Fluorspar, acid-grade	103,800	105,000	83,100	76,991 r/	96,500
Gypsum e/	450,000	450,000	450,000	450,000	450,000
Mica	600 e/	600 e/	210	1,897	--
Phosphate rock:					
Gross weight 4/ thousand tons	23,084	23,587	22,163	21,463 r/	21,983
P <sub>2</sub> O <sub>5</sub> content do.	7,848	7,850	7,500	7,200	7,400
Phosphoric acid do.	2,600 e/	2,669	2,696	2,732 r/	2,819
Salt:					
Rock	210,000 e/	107,604	156,158	147,960	150,000 e/
Marine e/	47,500	40,000	40,000	40,000	40,000
Talc and pyrophyllite	19,850	12,000 e/	14,655 r/	12,522 r/	15,000 e/

See footnotes at end of table.

TABLE 1--Continued  
MOROCCO AND WESTERN SAHARA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1997	1998	1999	2000	2001
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, anthracite	376,300	269,100	129,200	30,810 r/	1,908
Gas, natural:					
Gross million cubic meters	38	43	44	44 e/	44 e/
Dry e/ do.	35	38	39	39	39
Petroleum:					
Crude thousand 42-gallon barrels	35	35	35	35 e/	35 e/
Refinery products: 5/					
Liquefied petroleum gas do.	2,500	2,600	3,100	2,800	2,800 e/
Gasoline do.	3,400	3,600	3,800	3,800	3,800 e/
Jet fuel do.	2,000	2,500	2,200	2,200	2,200 e/
Kerosene do.	500	600	800	800	800 e/
Distillate fuel oil do.	17,800	16,700	18,700	18,000 e/	18,000 e/
Residual fuel oil do.	11,400	12,800	16,700	16,000 e/	16,000 e/
Other do.	6,000	8,500	5,300	5,000 e/	5,000 e/
Total do.	43,600	47,300	50,600	48,700 e/	48,600 e/

e/ Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. r/ Revised. -- Zero.

1/ Includes data available through October 2, 2002.

2/ In addition to the commodities listed, arsenic trioxide and a variety of crude construction materials are produced; but information is inadequate to make estimates of output levels.

3/ Reported figure.

4/ Includes estimated production of 1.5 million metric tons from Western Sahara.

5/ Refinery fuel and losses have been included in the output of individual products and is estimated to be about 1.8 million barrels per year.

TABLE 2  
MOROCCO AND WESTERN SAHARA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2001

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Anthracite coal	Charbonnages du Maroc (CdM) [Bureau de Recherches et de Participations Minières (BRPM), 98.89%]	Jerada	650,000.	
Barite	Compagnie Marocaine des Barytes (COMABAR) (BRPM, 22.5%; Norbar Minerals AS, 55%)	Zelmou	150,000.	
Do.	do.	Safi	80,000.	
Do.	Société Nord Africaine de Recherches et d'Exploitation des Mines d'Argana (SNAREMA)	Argana	30,000 chemical grade.	
Do.	do.	do.	120,000.	
Bentonite	Tolsa, SpA (Tolsa, 100%)	Iboughardain	20,000.	
Do.	Société d'Exploitation des Mines du Rif (SEFERIF) (BRPM, 100%)	Ouizane- Bouhoua	15,000.	
Do.	Compagnie Marocaine des Barytes (COMABAR) (BRPM, 22.5%; Norbar Minerals, 55%)	Azzouzet-Tidiennit	36,000.	
Cement	Asment de Temara (Cimentos de Portugal, 57.4%)	Temara	830,000.	
Do.	Lafarge Ciments (Société Nationale d'Investissement, 50%)	Casablanca	2,000,000.	
Do.	do.	Meknes	850,000.	
Do.	do.	Tamuda	800,000.	
Do.	do.	Tangier	350,000.	
Do.	Cimenterie de l'Oriental (CIOR) (Holderbank, 51%; private, 35%)	Oujda	1,000,000.	
Do.	do.	Ras El Ma	1,200,000.	
Do.	Ciments du Maroc (Italcementi of Italy, 55.5%)	Agadir	1,100,000.	
Do.	do.	Marrakech	1,300,000.	
Do.	do.	Safi	650,000.	
Cobalt	Compagnie de Tifnout Tiranimine (CTT) [Omnium Nord Africain (ONA), 55.2%; Société Metallurgique d'Imiter (SMI), 20%]	Bou Azzer	150,000 ore, 50,000 concentrate.	
Copper	Société Minière de Bou Gaffer (SOMIFER) (BRPM, 34.2%, SMI 36%; ONA, 7.6%)	Bleida	50,000 concentrate.	
Do.	Société de Développement du Cuivre de l'Anti-Atlas (SODECAT) (BRPM, 100%)	Tiouit	4,500 Cu, Au, Ag concentrate.	
Fluorspar	Société Anonyme d'Entreprises Minières (SAMINE) (ONA, 58%; SMI, 42%)	Meknes	120,000 concentrate.	
Gold	Akka Gold Mining Company (ONA, 70%; BRPM, 30%)	Iourim	NA.	
Iron ore	million metric tons	Société d'Exploitation des Mines du Rif (SEFERIF) (BRPM, 100%)	Nador	12.
Lead	Compagnie Minière de Guemassa (CMG) (ONA, 74%; BRPM, 26%)	Hajar	150,000 Zn concentrate, 32,000 Pb concentrate.	
Do.	Compagnie Minière de Touissit (CMT) (50% Compagnie Royale Asturienne des Mines S.A., Belgium, 50%)	Touissit	73,000 concentrate.	
Do.	Société de Développement Industriel et Minière (BRPM, 50%)	Zeida	40,000 concentrate.	
Manganese	Société Anonyme Chérifienne d'Etudes Minières (SACEM) [BRPM, 43%; Compagnie Minière de l'Ogooué SA, (COMILOG), 30%]	Quarzazate	130,000 concentrate.	
Petroleum refinery products	thousand 42 gallon barrels	Société Marocaine de l'Industrie du Raffinage (Corral Morocco Saudi Co., 100%)	Mohammedia	47,000.
Do.	do.	Société Chérifienne des Pétroles (SCP) (Corral Morocco Saudi Co., 100%)	Sidi Kacem	9,500.
Phosphate	million metric tons	Office Chérifien des Phosphates (OCP) (Government, 100%)	Youssoufia	6 concentrate.
Do.	do.	Benguerir	6 concentrate.	
Do.	do.	Khouribga	4 concentrate.	
Do.	do.	Sidi Chenan	5 concentrate.	
Do.	do.	BouCraa	6 concentrate.	
Salt, rock	Société de Sel de Mohammedia (SSM) (BRPM, 100%)	Mohammedia	150,000.	
Salt, marine	Société Chérifienne des Sels (SCS) [BRPM, 50%; Société Nouvelle des Salins du Sine Saloum (SNSSS), 50%]	Zima	50,000.	
Silver	kilograms	Société Metallurgique d'Imiter (SMI) (ONA, 67%; private, 20%; BRPM, 13%)	Near Quarzazate	210,000.
Steel rebar, wire rod	Société Nationale de Sidérurgie (SONASID) (private, 65%)	Nador	480,000.	
Zinc	Omnium Nord Africain mine and plant (ONA, 100%)	Guemassa	265,000 concentrate.	
Zircon	Agrupacion Minera de Investigaciones SA	Guelmin	NA.	

NA Not available.